

REMARKS

The present application includes pending claims 1-20, all of which were rejected. By this Amendment, claims 1, 7 and 14 have been amended. The Applicant respectfully submits that the pending claims define patentable subject matter.

Claims 1-6 stand rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent No. 4,722,348 (“Ligtenberg”). Claims 7-20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ligtenberg in view of United States Patent No. 5,803,089 (“Ferre”). The Applicant respectfully traverses these rejections for at least the following reasons:

I. Ligtenberg Does Not Anticipate Claims 1-6

The Applicant first turns to the rejection of claims 1-6 as being anticipated by Ligtenberg. Ligtenberg discloses a “catheter tip pressure transducer [that] is employed for purposes of measuring fluid pressure within a living body.” Ligtenberg at Abstract. Ligtenberg “relates to the art of pressure sensors and, more particularly, to a catheter tip pressure transducer of sufficiently small size that may be employed **for measuring fluid pressure, such as blood pressure, within the human body.**” *Id.* at column 1, lines 5-9 (emphasis added). In particular, “[p]ressure forces acting on the membrane beam result mainly in longitudinally extending deformation of the beam and this is sensed by one or more strain gauges carried by the beam.” *Id.* at Abstract. Thus, Ligtenberg discloses a system in which strain gauges are used to sense membrane deformation resulting from fluid pressure on the membrane. *See id., e.g.,* at column 3, lines 18-25 (“**This pressure responsive membrane** deforms in dependence upon the **pressure** being monitored. This deformation is sensed by strain gauges in the form of piezoelectric resistors carried by the membrane....”).

As shown in Figure 2 of Ligtenberg, the membrane 38 is located within the tubular housing 14 of the catheter proximate an inlet 16. *See id.* at Figure 2.

The membrane 38 faces the inlet aperture 16 so that pressure variations in a blood vessel or the like may be communicated to the membrane. The membrane is responsive to the pressure and flexes or deforms as a result thereof.

Id. at column 3, lines 64-68. The deformation caused by pressure variations is sensed by resistors on the membrane. *See id.* at column 5, lines 22-26. Thus, the strain gauges disclosed in Ligtenberg are positioned on a deformable membrane that is responsive to fluid pressure variations. The strain gauges are used to detect the deformation of the membrane and, therefore, the level of fluid pressure.

Ligtenberg does not describe, teach or suggest, however, a “strain gauge . . . configured to detect deflection of said flexible engaging member **in order to provide information regarding a location of said operative tip**,” as recited in claim 1, as amended. Again, the strain gauges of Ligtenberg are positioned on a deformable membrane **within** a catheter and are used to sense the amount of fluid pressure on the membrane. Thus, for at least these reasons, the Applicant respectfully submits that Ligtenberg does not anticipate claims 1-6.

Claim 4 recites, in part, “a strain gauge affixed to a portion of said flexible engaging member, . . . wherein said flexible engaging member is one of a needle, catheter, curette, and K wire.” Ligtenberg discloses that strain gauges are positioned on a deformable membrane 38 located within a catheter. Ligtenberg does not describe, teach or suggest, however, that strain gauges are affixed to the catheter itself. Thus, for at least this reason, the Applicants respectfully submit that Ligtenberg does not anticipate claim 4.

II. The Proposed Combination Of Ligtenberg And Ferre Does Not Render Claims 7-20 Unpatentable

The Applicant next turns to the rejection of claims 7-20 as being unpatentable over Ligtenberg in view of Ferre. Claim 7 recites, in part, a “deflection tracking system comprising at least one strain gauge affixed to a portion of said flexible engaging member **in order to provide information regarding a location of said deflectable operative end,**” as amended. The Applicant respectfully submits that neither Ligtenberg, nor Ferre, describe, teach or suggest this limitation, for at least the reasons discussed above in Section I. Thus, the proposed combination does not render claims 7-13 unpatentable.

The Applicant also notes that the proposed combination does not render claim 12 unpatentable for at least the reasons discussed above with respect to claim 4.

Claim 14 recites, in part, “using a second tracking method to track deflections of an operative tip of the medical instrument.” As discussed above, Ligtenberg discloses attaching strain gauges to a deformable membrane within a catheter to determine fluid pressure variations. Neither Ligtenberg, nor Ferre, describe, teach or suggest “using a second tracking method to track deflections of an operative tip of the medical instrument.” Thus, the proposed combination does not render claims 14-20 unpatentable.

III. Conclusion

In general, the Office Action makes various statements regarding the pending claims and the cited references that are now moot in light of the above. Thus, the Applicant will not address such statements at the present time. The Applicant expressly reserves the right, however, to challenge such statements in the future should the need arise (e.g., if such statement should become relevant by appearing in a rejection of any current or future claim).

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If the Examiner has any questions or the Applicant can be of any assistance, the Examiner is invited to contact the undersigned attorney. While no fee is believed due with respect to this Amendment, the Commissioner is nonetheless authorized to charge any necessary fees, or credit any overpayment to Deposit Account 50-2401.

Respectfully submitted,

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